

## **REMARKS**

### **Formal Matters**

Claims 31, 33-40, 42-49 and 51-58 are pending.

Claims 31, 33-40, 42-49 and 51-57 were examined and rejected.

Claim 58 is newly added. Support for new claim 58 is found in page 12, lines 4-7, page 17, lines 9-15 and Figs. 3a and 3b

Applicants respectfully request reconsideration of the application in view of the remarks made herein.

### **Rejection of claims under 35 U.S.C. § 102 (Chabreck)**

Claims 31, 34-37, 39, 49, 52-54 and 56 are rejected under 35 U.S.C. § 102(a) over Chabreck (U.S. Patent 6,586,038). Specifically, the Office Action asserts that Chabreck discloses a process for preparing a solid support that anticipates the subject claims. The Applicants respectfully traverse this rejection.

As discussed in the prior response, the claims are directed to a method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers. The Applicants submit that this element is not taught by Chabreck's disclosure, and, accordingly, this rejection may be withdrawn.

According to Chabreck's disclosure (in particular col. 1, lines 45-53, and col. 3, lines 18-21), Chabreck's method, like that of Klaerner cited in the previous Office Action, is a method that involves:

- a) covalently binding a polymerization initiator to reactive groups on the surface of a substrate, and
- b) polymerizing monomers onto the polymerization initiator.

Chabreck therefore discloses a method in which monomers are contacted with a polymerization initiator, rather than a method in which monomers are contacted with a surface reactive hydroxyl, carboxyl, amino or thiol group, as required by the rejected claims.

Simply put, like Klaerner cited in the previous Office Action, Chabreck derivatizes the surface reactive groups by reacting them with a polymerization initiator prior to addition of the monomers. As such, Chabreck, like Klaerner, fails to disclose contacting a surface reactive hydroxyl, carboxyl, amino or thiol group with a plurality of monomers, as required

by the rejected claims.

The Examiner argues that Chabreck's col. 3, lines 21-65 and col. 7, lines 35-59 disclose contacting a surface reactive hydroxyl, carboxyl, amino or thiol group with a plurality of monomers. Chabreck's col. 3, lines 21-65 does state that a substrate may be functionalized to provide reactive groups. However, as discussed in col. 6, line 64 to col. 7, line 50 of Chabreck's disclosure, these reactive groups are contacted with the polymerization initiator, not with monomers. Likewise, Chabreck's col. 7, lines 35-59 actually discusses covalent binding between surface reactive groups and the polymerization initiator, not covalent binding between surface reactive groups and monomers.

In view of the foregoing discussion, the Applicants submit that Chabreck fails to disclose any method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers. Accordingly, Chabreck fails to disclose an element of the rejected claims, and therefore cannot anticipate what is being claimed.

Further, the Applicants note that the methods of Chabreck (and Klaerner, cited in the prior Office Action), are methods that employ free radical initiated polymerization. A free radical polymerization initiator is first linked to the surface of a support, and polymerization is initiated by a free radical produced by the initiator.

The instant polymerization methods are not free radical initiated. The polymerization chemistry of Chabreck is therefore completely different to the method being claimed.

The Applicants respectfully submit that this rejection has been adequately addressed by the foregoing discussion. The Applicants respectfully request withdrawal of this rejection.

#### **Rejection of claims under 35 U.S.C. § 102 (Novartis)**

Claims 31, 34-37, 39, 49, 52-54 and 56 are rejected under 35 U.S.C. § 102(a) over Novartis (EP1095711). Specifically, the Office Action asserts that Novartis discloses a process for preparing a solid support that anticipates the subject claims. The Applicants respectfully traverse this rejection.

The Applicants note that the disclosures of Chabreck and Novartis pertain to related technologies. Chabreck and Novartis have an identical inventorship, and much of the disclosures of Chabreck and Novartis are identical.

As discussed above, the claims are directed to a method in which a surface reactive

hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers. Using similar reasoning to that set forth above, the Applicants submit that this element is not taught by the Novartis disclosure, and, accordingly, this rejection may be withdrawn.

According to the Novartis disclosure (in particular ¶12), Novartis's method, similar to that of Chabreck and Klaerner (cited in the previous Office Action), is a method that involves:

- a) covalently binding a polymerization initiator to reactive groups on the surface of a substrate, and
- b) polymerizing monomers onto the polymerization initiator to form a polymer brush.

Novartis therefore discloses a method in which monomers are contacted with a polymerization initiator, rather than a method in which monomers are contacted with a surface reactive hydroxyl, carboxyl, amino or thiol group, as required by the rejected claims.

Simply put, like Chabreck and Klaerner (cited in the previous Office Action), Novartis derivatizes the surface reactive groups by reacting them with a polymerization initiator prior to addition of the monomers. As such, Novartis, like Chabreck and Klaerner, fails to disclose a method that involves contacting a surface reactive hydroxyl, carboxyl, amino or thiol group with a plurality of monomers, as required by the rejected claims.

The Examiner argues that Novartis's ¶¶ 14-17 and 37 disclose contacting a surface reactive hydroxyl, carboxyl, amino or thiol group with a plurality of monomers. Novartis's ¶¶ 14-17 does state that a substrate may be functionalized to provide reactive groups. However, as discussed in ¶¶ 25-27 of Novartis's disclosure, these reactive groups are contacted with the polymerization initiator, not with monomers. Novartis's ¶37 discusses vinyl co-monomers. However, as discussed in Novartis's ¶39, those vinyl co-monomers are contacted with the polymerization initiator, not with the reactive groups.

In view of the foregoing discussion, the Applicants submit that Novartis fails to disclose any method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers. Accordingly, Novartis fails to disclose an element of the rejected claims and therefore cannot anticipate what is being claimed.

Further, the Applicants note that the methods of Novartis (and Klaerner, cited in the prior Office Action), are methods that employ free radical initiated polymerization. A free radical polymerization initiator is first linked to the surface of a support, and polymerization is initiated by a free radical produced by the initiator.

The instant polymerization methods are not free radical initiated. The polymerization chemistry of Novartis is therefore completely different to the method being claimed.

The Applicants respectfully submit that this rejection has been adequately addressed by the foregoing discussion. The Applicants respectfully request withdrawal of this rejection.

**Rejection of claims under 35 U.S.C. § 103 (Novartis or Chabreck and Klaerner)**

Claims 33, 38, 40, 42-48, 55 and 57 are rejected as unpatentable under 35 U.S.C. § 103 over Novartis or Chabreck in view of Klaerner. The Office asserts that Novartis or Chabreck's methods, combined with Klaerner's biopolymers (i.e., biopolymers that contain linking moieties, oligonucleotides, polynucleotides, and probe molecules), render the claims obvious. The Applicants respectfully traverse this rejection.

As established above, Novartis and Chabreck are each deficient in that they fail to disclose or reasonably suggest any method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers.

As discussed in the response to the previous Office Action, Klaerner also fails to provide such a method, and, as such, Klaerner fails to meet the deficiencies of Novartis and Chabreck.

Accordingly, Novartis, Chabreck and Klaerner, taken together or in any combination, fail to disclose or reasonably suggest an element of the claimed invention: a method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers.

In view of the foregoing, the Applicants respectfully submit that an element of the rejected claims is not taught by the combination of Novartis or Chabreck and Klaerner. Accordingly, the claimed invention cannot be obvious in view of the disclosures of Novartis or Chabreck and Klaerner, and this rejection may be withdrawn.

Further, the Office is reminded that the MPEP and current caselaw is explicitly clear about rejections based on obviousness: **the prior art must suggest the claimed invention.** This is explicitly set forth in MPEP § 2145.X.C and explained in great detail in MPEP § 2143.01. It is a central tenet of patent law.

In this case, the Office has combined references that the Office believes teach all of the claim elements when combined together, and has asserted that the claimed invention

would be obvious in view of the combined references. However, among other things, **none of the cited references suggest a method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers.** Accordingly, the cited prior art therefore *does not* suggest the subject matter of the rejected claims, and pursuant to current caselaw and the MPEP, this rejection may be withdrawn.

Simply put, the prior art fails to teach a central feature of the rejected claims. On this basis alone, this rejection may be withdrawn.

If this rejection is to be maintained, the Applicants specifically request that the Examiner explicitly sets forth the Office's basis (other than general, non-specific references to surface reactive groups and vinyl monomers) for suggesting a method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers. If this cannot be done, this rejection should be withdrawn.

Finally, the Applicants note that the methods of Chabreck, Novartis and Klaerner are methods that employ free radical initiated polymerization. A free radical polymerization initiator is first linked to the surface of a support, and polymerization is initiated by a free radical produced by the initiator.

The instant polymerization methods are not free radical initiated. The polymerization chemistries of Chabreck, Novartis and Klaerner are therefore completely different to the method being claimed, and cannot render the instant claims obvious, even if the Office could establish motivation for their combination.

The Applicants respectfully submit that this rejection has been adequately addressed. Withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103 (Novartis or Chabreck and Mitsuhashi)**

Claim 51 is rejected as unpatentable under 35 U.S.C. § 103 over Novartis or Chabreck in view of Mitsuhashi. The Office asserts that Novartis or Chabreck's methods, combined with Mitsuhashi's cerium catalyst, render the claims obvious. The Applicants respectfully traverse this rejection.

As established above, Novartis and Chabreck are each deficient in that they fail to disclose or reasonably suggest any method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers.

Mitsubishi's disclosure does not provide such a method, and, as such, Mitsubishi fails to meet the deficiencies of Novartis and Chabreck.

Accordingly, Novartis, Chabreck and Mitsubishi, taken together or in any combination, fail to disclose or reasonably suggest an element of the claimed invention: a method in which a surface reactive hydroxyl, carboxyl, amino or thiol group is contacted with a plurality of monomers.

In view of the foregoing, the Applicants respectfully submit that an element of the rejected claims is not taught by the combination of Novartis or Chabreck and Mitsubishi. Accordingly, the claimed invention cannot be obvious in view of the disclosures of Novartis or Chabreck and Mitsubishi.

Further, the Applicants note that the methods of Chabreck and Novartis are methods that employ free radical initiated polymerization. A free radical polymerization initiator is first linked to the surface of a support, and polymerization is initiated by a free radical produced by the initiator.

The instant polymerization methods and the methods of Mitsubishi are not free radical initiated. The polymerization chemistries of Chabreck and Novartis are therefore completely different to the method being claimed, and completely different to that of Mitsubishi.

The Applicants submit that because Mitsubishi, Chabreck and Novartis rely on different chemistries, they would not be readily combined together by one of skill in the art.

The Applicants respectfully submit that this rejection has been adequately addressed. Withdrawal of this rejection is respectfully requested.

### CONCLUSION

The Applicants respectfully submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Timothy Joyce at (650) 485 4310.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078.

Respectfully submitted,

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